

PATHWAYS

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Educational Games

The need for new and more interesting methods of teaching, has become both essential and urgent. The child, more mature and more independent even at the early stages, due to the changing environment and social set-up, is very responsive to the motivation directed at him by the teacher. The spark of interest once lit can create the necessary foundation.

A group of about forty teachers, doing the summer course at the Centre for Cultural Resources and Training this year, got together and worked at building educational games. One realized then how easy the effort and how excellent the result could be if teachers made educational games an indispensable factor in class-room teaching. Every subject on the curriculum proved accommodating and the games varied from revision and testing to a search for information, from individual fun to group participation, from games for toddlers to games for adolescents.

Perhaps, the most important basis for the building of educational games, is to study the popular games children are familiar with in different areas, both geographical and social. It is also essential to note the age groups of the children that play them, for children-at-play have their own hierarchy. To aim a 'childish' game at an older child would be an unpardonable fault on the part of the teacher. Having chosen popular and attractive games, the teacher should try and convert them to meet a set purpose or aim for which he plans to evolve the game. For example, even on a weary afternoon, middle school children play a popular number-game of simple multiples. The group decides for example that 'three' and its multiples will be the silent numbers. There are shouts of 'one' and 'two' and then there is a hush. 'Four' and 'five' are screamed out and there is again a silence and so on until one child says 'nine' or 'twelve' or 'fifteen' and therefore loses its place in the ring. A mathematics teacher can use this for revising tables as each child has to concentrate to catch the other ones out and has to be conversant with the various tables.

A group of mathematics teachers, attending the course evolved a very interesting game... the joining of dots in serial number order to produce a picture. This was the basic game they used, but they showed keen imagination in the way in which they went about it. To make a picture of the Taj

Mahal, a spray of dots had to be joined in serial number order forming minarets, domes and doorways. However, the number of each dot had to be found out after solving the small sum that went with it. e. g. $\sqrt{4}+8=$, $9^2+2=$ and $4^3+2^2=$. A problem could have arisen, for the answers at consecutive dots had to be in a regular series. 'One' had to be next to 'two' and then lead on to 'three'. The child could easily list a mechanical series of answers. To avoid this the series was cleverly broken, e. g. one minaret was constructed by joining the answers 21, 22, 23, 24, 25 & 26. Now the continuing series of numbers, i. e. 27, 28, 29, 30, 31 formed a dome placed far away. Thus the children could not join the numbers unless they had worked out the whole sheet. The game proved very interesting. The sums can be graded according to the specific knowledge of a given class. It gives an excellent opportunity for tapping the whole syllabus.

Another group of teachers made a variety of card packs. The essentials were very simple—four suits and thirteen cards per suit. The cards in each suit are numbered serially. The four suits were either four writers in literature, four kings in history, four types of musical instruments in the theory of music. The cards in the suits were related. In the first case, they were the names of books and characters (drawn and named). Pictures and names of queens, ministers, famous men, buildings, dates or facts were used in the second case. The pictures and names of instruments of each type were used in the third case, e. g. 13 string instruments in one suit and 13 percussion instruments in the other. The method of playing the game would be similar to popular card games like Rummy, Memory and Patience. They can be played for points totalling to a fixed maximum. Children never tire of card games and this is a beguiling way of increasing their knowledge and sense of observation.

Another game was evolved for those uninteresting yet necessary details that students are compelled to learn, often with great difficulty. Taking a short list of 5 flowering trees, the group decided to try out a method by which children could, in a leisurely manner, assimilate information regarding these trees, e. g. common names, botanical names, vernacular names (one in a North Indian language, and one in a South Indian language), the type of tree (deciduous or evergreen), the correct recognition of leaf, flower and fruit, the season of flowering and the uses of the tree.

Common Name ↓	Botanical Name	Vernacular Name	Deciduous or Evergreen	Leaf	Flower	Fruit	Flowering Season	Uses
Laburnum								
Jacaranda								
Gul Mohar								
Cassia								
Queen's Flower								

The construction of the chart was simple. Five long horizontal cellophane paper pockets were made on the chart paper. Five cards with the common names of each of the five trees were placed in position as shown in the diagram. A group of 40 more cards, eight for each tree, were then prepared. Care has to be taken about the size of the cards, making sure that nine can fit comfortably into each

pocket. Where information is necessary e. g. vernacular names and botanical names, reference books can be consulted. If there are no artists to draw or paint the leaf, flower, fruit, authentic pictures can be carefully selected, cut out and pasted on the card. The method of playing the game is simple. Each child picks on a tree. The pack is shuffled and placed downwards as in Rummy. Each player picks a card and places it in the correct column in his cellophane bag. If the card is not suitable the player discards it and the game proceeds. When the pile is exhausted the pack is reshuffled and the play continues. The winner whose line of 9 cards is completed first gets 10 points and the second player gets 5 points. The game can be played 5 times so that a player chooses each of the 5 trees in turn. An advantage of the game is that the arrangement of facts in a sequence more than once helps the students to remember them better.

Again, it has an unending series of variations. Numerous sets of cards can be made on any given topic of a subject. The same chart can be used for other subjects by clipping on additional strips bearing suitable headings. Here are two possibilities (i) In Chemistry the nine column-headings could read name of element; symbol, molecular formula; valency; formulae of oxide, chloride, sulphate, nitrate, carbonate. (ii) In History, they will read—name of king, dynasty, dates of reign, monuments associated with his reign, extent of empire, important administrative reforms, major wars and dates, important cultural development and name of successor. Note, the empires should be indicated by small maps. The king and monuments can be shown by drawings or printed pictures. Information must be precise, concise, unambiguous and may even be listed in point form. The game will also appeal to an older age group. As exam time is nearing, the chart can be left with all the cards in place. It can serve as a comprehensive aid to revision.

Many simpler game were also made at the workshop. A map of India was drawn on chart paper. Twenty, 1"×1" squares were cut out at particular points. On each was drawn a replica of a famous historical monument e. g. the Sarnath Stupa, the Kutub Minar, Itmad-ud-Daula, Madurai Meenakshi Temple, the Ajmer Mosque, Amber Fort, etc. The child has to think and put each square in its proper position. A knowledge of location and shape can be easily tested.

Another map had a long travel-route with many towns, rivers and mountains marked on it. Each short lap of journey had a number. On the throw of dice, the players could proceed on the journey or stop according to instructions given on a card bearing the same number. The player who reaches the final destination first, wins.

The common, yet all-time favourite, 'Snakes and Ladders' was converted into a geography game. Instead of snakes, one can draw rivers, waterfalls and other hazards to be overcome before reaching the destination.

An unfailing device that the teacher can rely on is the electrical question-box. One box can contain ten to twenty cards with questions and answers based on the subject. An alternative idea can be small diagrams on one side with correspondence labels and information on the other. Again there can be many bundles of cards pertaining to a variety of subjects. The construction of the box is very simple. Typed cards with questions forming one vertical line and jumbled answers forming the other should be prepared. Metal pins should be fixed next to each question and answer. A concealed electric circuit should be formed between a question pin and the correct answer pin through a battery and a visible light bulb. When the circuit is completed by means of a wire touching the question-pin

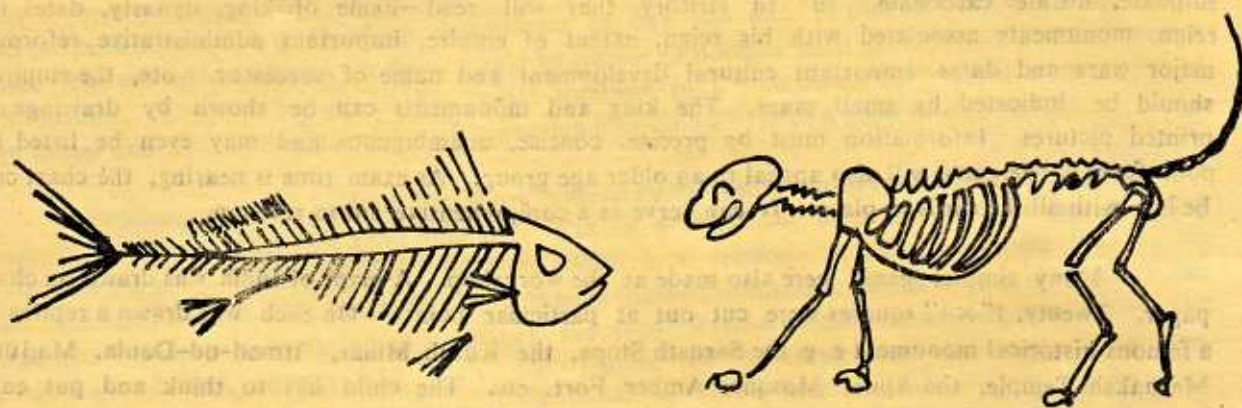
and the correct answer pin the light bulb will glow. Thus quite independently the student can continue his search for knowledge in new areas.

Teachers should determine the proportion of teaching time that can be allocated to games. If used properly and if well-timed there can be no adverse effect on the academic progress of the child. In fact, a well-chosen game can make the classroom more lively, the children more receptive and therefore can promote the aims of education in a more definite manner.

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Skeletons in your Cupboard

By Shakuntala Bhattacharya
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Do you have any skeletons in your cupboard? I am sure your prompt reply is 'No, I've nothing to hide!' The skeletons I am going to talk about are not the ones that you hide, but rather isplay in your school biology museum or in a dried flower arrangement at home.

By definition a skeleton is the hard mass of tissues which gives an organism internal support. In case of higher animals this consists of bones. Through the ages, as animals have evolved to different shapes and various ways of living, bones have changed too. The bones of the fore-limbs adapted for climbing in monkeys, flying in birds and swimming in fish. And having skeletons in biology cupboards could make the lesson on adaptation just that much more exciting and lucid.

It is not easy to buy good skeletons at low prices. So why not try to make a few? The process is quite easy and your students will enjoy helping you! The first step is to procure a small dead animal. The easiest to obtain would be chicken or fish. With a little help from your class you may be also able to procure mice, rats, sparrows, lizards and other small vertebrates. Wanton killing however should not be encouraged.

You will also need a pair of scissors, scalpel, forceps, an old toothbrush, a pan large enough to hold the animal and cover it with water, a tray, a stove or heater, wire which is not too stiff nor too

soft, cardboard pieces, hydrogen peroxide, Fevicol, Quickfix or some such strong glue. Hydrogen peroxide is easily available at a chemist's shop.

Remove as much skin and flesh as possible without damaging the bones, with the aid of scissors, scalpel and forceps. After wrapping in paper put all the waste material into a garbage bin for proper disposal.

Put the rest of the carcass in the pan and cover with enough water. Boil until the remaining flesh falls away from the bones. This may need more than an hour. Set aside to cool. Take the bones out and wash them in fresh water. Use the toothbrush to clean the bones. Ensure that you have all the bones. Sometimes the tiny ones may remain behind so check up thoroughly before disposing of the soup.

To make the bones look really white bleach by soaking in dilute hydrogen peroxide (1 part peroxide in 20 parts water).

Assemble the skeleton on the tray, with the aid of a picture of the animal or its skeleton. Display either on a card by sticking with Fevicol or Quickfix or else make a three dimensional model using wire, a proper wooden base and supports.

Plants also have a supporting skeleton made up of the vascular bundles. You may have noticed that when leaves decay it is the soft part that goes fast, and you can often see a network of veins. You may have also seen net-like leaves used for floral displays. Making them is rather simple.

You will need a stainless steel, glass or enamel pan; forceps, stiff painting brush, strong detergent, washing soda or caustic soda; a stove or heater, newspapers.

Choose leathery leaves-peepul gives very good results and can be used as a starting material. Make a strong solution of detergent and boil the leaves in it. Take out a leaf from time to time to see whether the soft tissues have degenerated. If you can brush away the soft tissue leaving the veins, your leaf is ready. Pour away the detergent solution and wash each leaf thoroughly under running water, carefully removing the soft tissue with the brush. Press and dry between newspapers. (Caution: detergent, washing soda, and caustic soda are corrosive to the skin. Use rubber gloves if possible). Leaf-skeletons can also be bleached using hydrogen peroxide, or colored using water-colours or ink.

If you have a lot of patience you need not go to all this trouble. Just soak the leaves in a pan of water and leave outside in a warm place. Natural rotting will take place. After a week examine every day or two to find out if they are ready. Don't be impatient, it may take a month or more! This method is very safe for children.

Don't hide the skeletons in your cupboard, they are for viewing!

A little girl kept writing 'I gone home', instead of 'I went home', so the teacher told the girl to write 'I went home' fifty times after school. When the girl had finished she left a note for the teacher, 'I done my lines and I gone home.'

What does P.T. stand for?

Physical Torture.

What does the winner lose in his race?

His breath, of course.

When is cricket a crime?

When there is a hit and run.

USING 'KOLAM' PATTERNS IN A CLASSROOM

Floor decorations of different kinds may be seen in homes all over India. Known in the South as 'kolam', they are usually drawn free-hand using finely ground rice flour or chalk powder or a thin paste prepared by grinding well-soaked rice.

Given below are some samples. They provide practice in drawing straight lines and flowing curves—an aid to good handwriting. The children can learn to hold a pencil or crayon steadily. The use of squared paper (maths notebooks) makes it easier to draw lines of equal length and identical-looking curves. Younger children will enjoy colouring these patterns. Older children develop a sense of symmetry and can have great fun evolving new patterns.

This pattern is not as complicated as it looks. Start with a square 7×7 dots. Add dots at the corners to make eight small 3×3 squares.

The first step is to draw the 'star' (top left). The pattern progresses as shown (bottom left). One complete quarter section is shown (bottom right). Finally outline the entire figure (top right). Notice the parallel lines.

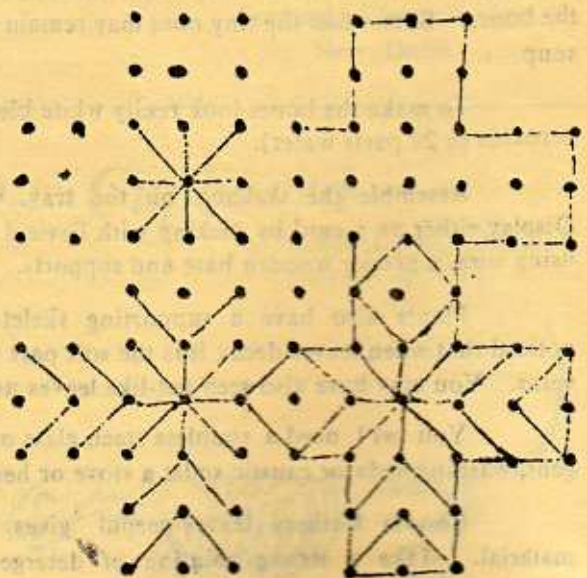


Figure A

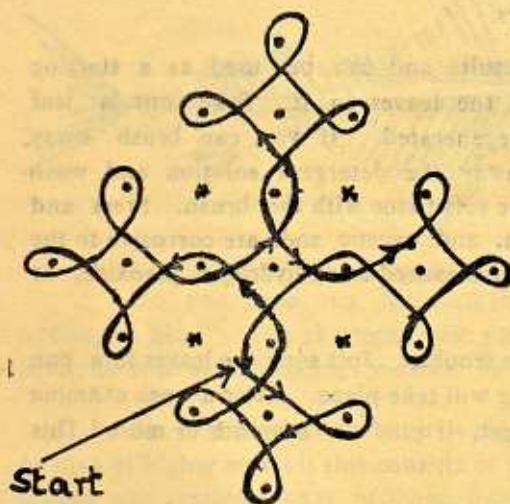


Figure B

Figure B starts with a central line of 7 dots. On either side the dots at the end of the line are removed and the successive lines have five, three and one dot each. The arrow indicates where to start. Practise drawing a complete uninterrupted line. The dots shown as stars may be left out at later stages if desired.

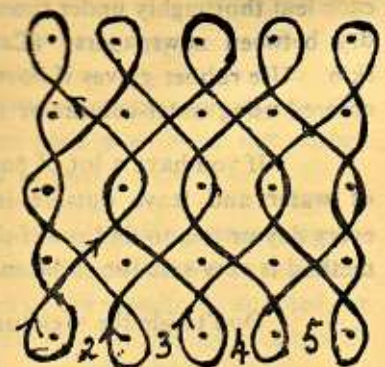


Figure C

Figure C starts with a 5×5 dots square. Each line starts to the left of a dot on the bottom row and comes back to its starting point. The first and fifth lines are slightly different in order to close the pattern.

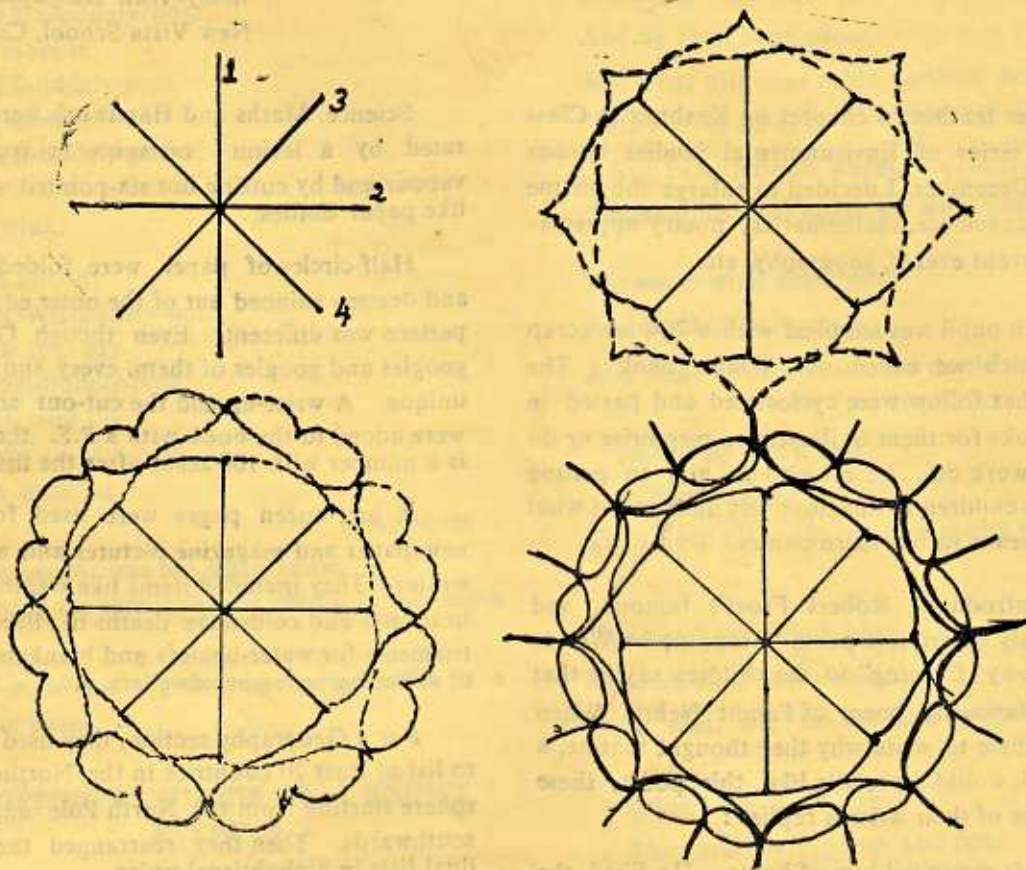


Figure D

Figure D shows the steps in the making of circle based patterns. The lines 1 and 2 are drawn first. Lines 3 and 4, of the same length, are the bisectors of the right angles. Thus the pattern starts as the radii of a circle, or the spokes of a wheel. The second step shows alternate spokes being joined by a 'dome-shaped' curve which has its peak over the left-out spoke. Step three joins the peaks of the domes. Step four can be varied in many different ways; only one possibility is shown here. Ask the children to experiment and find patterns of their own liking.

PATHWAYS

Rising costs have forced us to raise the annual subscription PATHWAYS to Rs. 8/-. Each individual copy may be obtained for Rs. 2.50 only. Renewals received after March 1st, 1982 will cost Rs. 8/- per annum. Please send money orders to the Educational Planning Group, 4, Raj Niwas Marg, Delhi-110054.

As always PATHWAYS will be issued four times in February, April, August and November each year. Articles and new ideas from teachers are welcome. Please send them to the office before the 20th of the preceding month

ROBERT FROST FOR CLASS III ?

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After teaching a chapter on Kashmir to Class III in a series of Environmental Studies lessons during December. I decided to enlarge the theme to include science, mathematics, poetry appreciation, current events, geography, etc.

Each pupil was supplied with a 20-page scrap book which we called our Winter Book. The poems that follow were cyclostyled and pasted in their books for them to illustrate, memorise or do written work on . . . all with an aim to getting Calcutta children to imaginatively understand what winter means in Northern climes.

I introduced Robert Frost's famous and beautifully descriptive poem "Stopping by Woods on a Snowy Evening" to the children saying that it was a favourite poem of Pandit Nehru. When I asked them to write why they thought that he, a Kashmiri, would especially like this poem, these were some of their written replies :

- * It reminded him of home. He liked the beauty and quietness of the forests covered with snow.
- * This poem is lively and teaches everyone that you can't get stuck watching lovely things, leaving all your work behind.
- * He would like this poem because he wanted to work and work for India.
- * A Kashmiri person would like this poem because the poem describes a common and beautiful scene of Kashmir. We find trees in Kashmir covered with snow. The villages are far apart and one has to go miles through the forest to reach one's village home.
- * A Kashmiri would like this poem because Kashmir is a place of nature, like it's described in this poem.

Science, Maths and Handwork were incorporated by a lesson on snow as frozen water vapour and by cutting out six-pointed snow flakes like paper doilies.

Half-circles of paper were folded in thirds and designs snipped out of the outer edges. Each pattern was different. Even though God makes googles and googles of them, every snow flake is unique. A write-up and the cut-out snow flakes were added to the book with a P.S. that a google is a number with 100 zeros after the first digit.

A half-dozen pages were used for pasting newspaper and magazine pictures and articles on winter. They included items like weather reports, headlines and cold-wave deaths in Bihar, advertisements for water-heaters and blankets, pictures of shivering pavement dwellers, etc.

For a Geography section, they used one page to list at least 20 countries in the Northern hemisphere starting from the North Pole and moving southwards. Then they rearranged their individual lists in alphabetic order.

For vocabulary development, we made a list of eight "quiet" words, arranged them in alphabetical order. Then they were challenged to use all eight words within three sentences. They managed to come up with some fairly complex sentences like :

1. My friend quietly whispered the idea of making balls of snow to throw on other friends.
2. We were told to sit still and in silence by Mrs. Dasgupta when our classes go on so that the school will remain peaceful.

The time of year (winter) and the main topic (Kashmir) were thus very convenient vehicles for a wide range of information and understandings for eight year-old boys and girls in Calcutta

Here are the poems we used. Beneath some are given suggestions for an associated activity.

THE MORE IT SNOWS

The more it
SNOWS-tiddely-pom,
The more it
GOES-tiddely-pom
The more it
GOES-tiddely-pom
On
Snowing.

And nobody
KNOWS-tiddely-pom,
How cold my
TOES-tiddely-pom
How cold my
TOES-tiddely-pom
Are growing.

A.A. Milne

- * His trouble was too much snow.
During the monsoon, our trouble is too much rain.

Re-write this in your own way and make it a monsoon poem.

STOPPING BY WOODS ON A SNOWY EVENING

Whose woods these are I think I know.
His house is in the village though.
He will not see me stopping here
To watch his woods fill up with snow.

My little horse must think it queer
To stop without a farmhouse near
Between the woods and frozen lake
The darkest evening of the year.

He gives his harness bells a shake
To ask if there is some mistake.
The only other sound's the sweep
Of easy wind and downy flake.

The woods are lovely, dark and deep.
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.

Robert Frost

(a favourite poem of Jawaharlal Nehru's)

THE NORTH WIND DOTH BLOW

The north wind doth blow
And we shall have snow,
And what will poor robin do then, poor thing?

He'll sit in a barn,

And keep himself warm,
And hide his head under his wing, poor thing!

The north wind doth blow
And we shall have snow,
And what will the dormouse do then, poor thing?

Rolled up like a ball,

In his nest snug and small,

He'll sleep till warm weather comes in, poor thing!

The north wind doth blow
And we shall have snow,
And what will the children do then, poor things?

When lessons are done,

They must skip, jump, and run,

Until they have made themselves warm, poor things!

- * With this we incorporated a lesson on hibernation.

FIRST SNOW

Snow makes whiteness where it falls.

The bushes look like popcorn balls.

The places where I always play

Look like somewhere else today.

Marie Louise Allen

- * How would our school playground look after a surprise snowfall? Draw pictures to show this.

I HEARD A BIRD SING

I heard a bird sing
In the dark of December
A magical thing
And sweet to remember.
"We are nearer to spring
Than we were in September."
I heard a bird sing
In the dark of December.

Oliver Herford

WINTER TREE

The little trees, white and slim,
Gleaming in the forest dim,
Must think the day is almost gone.
For each one has her nightie on.

* Show how a tree by your Calcutta house would look if it were a snow nightie

A POPCORN SONG

Sing a song of popcorn
When the snowstorms rage;
Fifty little brown men
Put into a cage.
Shake them till they laugh and leap
Crowding to the top;
Watch them burst their little coats
Pop!! Pop!! Pop!!

Nancy Byrd Turner

(This can be sung to the tune of "Sing a Song of Six pence.")

* Naturally, we popped corn!

A science lesson on how heat changes things followed,

- i) Turns water to steam
- ii) Turns raw eggs hard
- iii) Turns hard kernels of corn (maize) to softer popcorn.

AN INTERESTING BOOK FOR TEACHERS

Microteachin^g .. A Handbook for Teachers

(The Teaching in India Series)

Iris Paintal, Lady Irwin College, Dept. of Education, Delhi.

Oxford University Press, 1980, 147 pages, Rs. 12-00

Ms. Paintal, while explaining the skills required by a teacher to perform her job effectively, offers practical advice on how to develop them as well. The importance of planned questioning, varied stimuli, reinforcement and of explanations linked to suitable examples are discussed. In addition, useful tips on the use of the blackboard and audio-visual aids are included. There is an entire chapter on the skill of lecturing, by far the most commonly used method at secondary and higher levels—which analyses problems associated with this type of teaching and suggests ways of improvement.

Microteaching implies the learning and practice of teaching skills, one at a time, working in small groups followed by immediate and specific feedback. The book explains this training technique and might even be handy for a group of teachers wishing to improve their own teaching skills.

It is written in simple language, enlivened by cartoons and should be helpful to most teachers.

QUESTIONS ? ? ?

Teachers are always asking questions ; at least everyone says they do just that—endless questions at examination time, during class tests and even while they teach ! This article is mostly about the last kind —the ones we ask students to answer orally when we are teaching.

First let us ask ourselves some questions :

(i) Do we ask enough questions ? Or are we inclined to give facts and content only ?

(ii) Do we try to give everyone in the class an opportunity to answer a question ? It is no doubt* pleasurable to have a bright student respond to our questions and to hear a correct response, but what about the average and less able members of the class ?

The positive feed-back obtained when a teacher praises a child for a correct answer is a strong motivating factor, encouraging the child to learn better. It gives a slow learner a tremendous boost if he (or she) is given a pat on the back for a correct answer even if it is to a relatively simple question. This means that we must select the questions for such children thoughtfully. Such encouragement is also a way of drawing the shy students out of their shells.

(iii) Do we show impatience when a child takes some time to answer ? Do we quickly pass the question on to a bright student whose hand is already up ?

Such impatience or any form of ridicule (often unintended) can hurt a child's feelings.

(iv) How often do we answer our own questions without waiting for the pupils to think about them ?

Both this and the habit of repeating questions lead to inattention on the part of the class. They know that the questions will be repeated and that they need not exercise their minds to find the answers. If we intend to give the details anyway, then there could have been no need to pose a question at all!

(v) Do we think about our questions ? Plan them before we go to class. ?

To answer this we must think about the different types of situations in which we ask questions. On entering a class, meeting children for the first time, we often ask simple questions like 'What is your name ?', 'Are you feeling better today, Shiela ?', to establish a rapport with the students. Sometimes we need other types of information, not related to the subject we are about to teach.

When the lesson begins, it generally does so with questions intended to revise the earlier work or to ascertain the extent of the pupils' knowledge before proceeding further. Questions might be used to draw attention or create interest in the topic of the lesson.

Subsequently, varied questions need to be used to check on the pupils' understanding of the new topic ; to maintain their interest; to lead them through steps of reasoning (or observation) and logical thinking to certain conclusions; to check their ability to apply the principles being taught; to clarify difficulties and perhaps to summarise at the end of a lesson.

Readers of PATHWAYS might recall the different steps in the development of cognitive learning (Setting Behavioural Objectives III; Vol II, No. 4; November 1980). Applying that knowledge, they will readily agree that some questions merely test a pupil's ability to remember facts or information.

These have their place; but we must weigh carefully the proportion of such questions in our lessons. Laws, dates of importance, spellings, re-iteration of lists do not demand more than the ability to statements of rules, memorise well.

A step higher than mere recall, are questions which test the comprehension of the pupil or the ability to apply rules and techniques which have been taught. When a sum has been done in class, if it is repeated with different numbers, the pupil is not really called upon to apply what has been taught. If however, it can be given a slight twist, repeated with a little variation in the words or the method, it would prove a better question. Questions of these three kinds are termed lower-order questions and appear quite commonly in a good lesson.

(vi) How many higher-order questions do we ask ?

These questions will require the children to compare and contrast, explain (something new), analyse, synthesise and evaluate. Identifying cause and effect, making predictions, solving problems, putting things together in new ways, judging and expressing reasoned opinions are the outcome of this type of questioning. Questions of this type keep our pupils alert and keep them thinking.

(vii) Do we word our questions clearly and unambiguously ? Are they vague; having more than one possible answer ? Can the pupil get away with a mere 'Yes' or a 'No' ? Are they leading questions, do they give away the answer itself ? Are they complete, or do we need to keep prompting the pupil to get the answer ?

(viii) In what way do we ask these questions ? Do we sound friendly ? challenging ? Do we convey an impression of 'I know you can't answer me' ? or do we encourage a response with a smile ?

When you go to class tomorrow morning, perhaps you might like to keep a track of what you are doing. Many of our mannerisms become so much a part of our behaviour that we remain unaware of what we do. Taping one's lesson might prove one way of a self check. A friend might also be asked to sit in and maintain a check-list. Finally, even if we are alert to these probable mistakes, we could do much to improve ourselves as teachers.

A JUNK BOX

Primary teachers will find it useful to keep a junk box in a corner of the classroom. The material stored in it comes in handy for a variety of teaching-learning situations—new vocabulary, understanding concepts, art and craft work. The list given here gives you some ideas of the things you might collect. No doubt, you will add other items to this. If you have the imagination and patience, many useful toys and teaching aids can be created out of such 'junk'.

Waste Materials in Rural Areas

Leaves * Seeds * Dried Vegetables * Jowar stalk * Bamboo sticks * Bark of trees like date palms * Cocount shells * Groundnut shells * Dried beans * Corn cobs * Tree Twigs * Sea shells * Clay * Straw * Broken clay pots and pans and brick pieces * Stones and pebbles * Old cloth pieces * Sand * Fibres of all varieties.

Waste Materials in Urban Areas

Nails * Paste tubes and their caps * Empty bottles and tins * Plastic and iron wires * Cardboard * Bottle corks * Waste papers * Bottle straws * Sand papers * Leaves * Ropes * Waste cloth cuttings * Wool * Threads * Ice cream cups and spoons * Plastic glasses * Buttons * Used plastic bottles * Cold drinks-caps * Used dusters * Empty chalk boxes * Electric Switches * Broken iron pipes * Carpenter's cuttings * Sweets wrappers * Used ball pens and their used refills * Paper Cutting Waste * Bobbins * Pulp Board packages * Corrugated papers * Metal cuttings * Screws, Nuts and Bolts * Milk bottle caps * Cans * Jute packing leftovers * Plastic/Thermocol packing * Rubber band strips * Tyres * Empty cigarette packings * Big Spools * Small spools (reels) * Clay * Wood * Seeds * Shells * Pebbles * Leaves * Fruits * Wooden pieces.

THE EFFECTIVENESS OF MASTERY LEARNING

A SESSION OF TRY-OUT

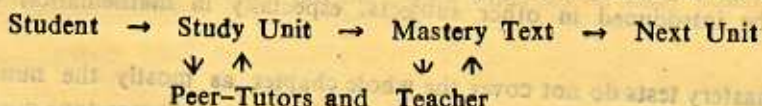
What is the Mastery Learning Procedure?

In the mastery learning procedure the student interacts with a structured course and paces himself through it. He also interacts with peer-tutors (fast-pacers) and the instructor to get his difficulties removed individually. During the process of learning, the student evaluates himself by doing self-testing exercises. The student is given the next assignment only when he has consolidated the previous one, which is assessed by a mastery test. He must demonstrate a prescribed level of performance (80% or 90% or 100% marks, as deemed right by the teacher).

The mastery learning material in physics, called Individually Guided System of Instruction (IGSI-Physics), developed by the Department of Education in Science and Mathematics of the NCERT, was tried in the Motilal Nehru School of Sports, Rai for the session 1981-82. The learning material was supplied by the NCERT.

The learning material is divided into several learning segments called study units. The subject matter in a study unit is as much as can be assimilated and consolidated by an average student in a week's time at a normal pace of learning. The student paces himself through the study unit, seeks individual help from the peer-tutors and the teacher and tests himself through the self-assessment exercises before taking the mastery test. The student is given the next unit only when he demonstrates mastery over the given study unit.

The mechanics of learning the IGSI-Physics is as shown in the following diagram.



About IGSI-Physics

The IGSI—Physics instructional material is meant for class XI of the Central Board of Secondary Education, Delhi. It is an adaptation of the Keller plan to suit Indian conditions. Presently, the course material is available in cyclostyled form from the NCERT. It can be obtained by a Physics teacher after undergoing reorientation in the use of the material.

The IGSI-Physics is divided into 20 study units. The units are well-structured and sequenced. Each unit has an interesting introduction, specific objectives, learning procedure, course policy, grading policy, and self-testing exercises. The method of using the study material is made clear to the student by a trial unit which explains the methodology of mastery learning. The most important feature of the course is that five different mastery tests are available on each study unit and the failure in a mastery test does not count against the student.

The Results of the Try-out

The IGSI-Physics was tried on a group of 25 students for the session 1981-82 on a full-time basis. It was found that the students' achievement in the final examination of class XI (the question paper and the scoring key was sent by the C.B.S.E.) increased by 5% over their achievement in science in the public examination held at the end of class X (C.B.S.E.)

The student's reactions to the IGSI - Physics were collected using an opinionnaire. Three factors—clarity, difficulty and practicality of the course—were analysed. It was found that :

- i) 80% students were clear about the objectives, grading policy and course policy.
- ii) Almost all students liked the course in terms of the individual help from the peer-tutors and the teachers.
- iii) 62% students found the mastery learning procedure more demanding and difficult as compared to the traditional method.
- iv) Though a good majority of students found IGSI more difficult; nevertheless, they found it more practical (64%) over the traditional method.
- v) There was, in general, a favourable response to the mastery learning procedure.

Some Typical Comments of Students

The students were asked to give their free and frank comments about the learning model. Some of the comments are listed below.

- * The course gives thorough and clear knowledge of all the concepts.
- * The course was a help to me as it developed the habit of self-study.
- * The course has helped me to become self-reliant and self-confident.
- * I think, if the lecture system and IGSI are combined, it can give a lot more good results. In such a blending, the lecture should be brief and be followed by individualized learning of IGSI.
- * In the traditional method, students copy notes and never do things themselves. This course gave me a habit of doing things on my own.
- * I would like this course to be introduced in other subjects, especially in mathematics, which requires a lot of practice.
- * This course is alright but the mastery tests do not cover the whole chapter as mostly the numerical sums are asked in the test. I would recommend that the derivations, short-answer-type questions and recall-type question also be included in the mastery tests.

Personal Reactions:

some of the positive features of this method are :

(a) **Favourable attitude towards tests:** The student takes the mastery test about 25 times in an year. His test is corrected in his presence and he gets a chance to defend his answers and this practice helps the student to correct his responses in future. One of the benefits has been a more favourable attitude among the students towards the tests. Also, failure in the mastery test is not counted against the student in any way.

(b) **Self-discipline:** As the procedure is a self-paced and self-directed learning model; it develops a sound habit of self-discipline and regular study amongst students.

(c) **Self-development:** It gives a continuous measure of the student's progress and helps him in charting his own progress towards the specified goal; in improving upon his last performance.

(d) **Emotional stability:** As most of students get A-grades, giving a positive indication of adequacy in learning, it leads to better emotional responses from the students.

Lalit Kishore
Motilal Nehru School of Sports
Rai, Haryana

A GAME ON BIRTHDAYS FOR FOUR YEAR OLDS

Every morning soon after the assembly I ask the children, "Whose birthday is it today"? And as the child stands up, the whole class sings "Happy birthday to you... ..".

Following the session on singing, I ask the class "Who are the children who celebrate their birthdays in January?" And as they respond, I give them pieces of red chart or glazed paper with circles marked on it. Then I help them cut and paste the circle against the month of January on the class Bulletin-Board. Similarly the children who celebrate their birthdays in February are given a piece of blue paper. I encourage them to write their own name in the circle.

Based on the Birthday Game we have made a graph with the help of the children. Part of the graph is given below (for the forty children in the class). Each circle represents a child.

Graph	Month	We have made use of the graph in our language and Math class. By looking at the class Bulletin Board I ask several questions. How many birthdays fall in January? Which month has more birthdays—November or August? Which are the months with the same number of birthdays?
0	January	
000000	February	
000	March	
000	April	
000	May	
0000	June	

I have found the Birthday Game to be a good method to help children understand an abstract concept like the different months in a year. Imagine my delight when a few days back Sweta brought a calendar and exactly pointed out the month when her birthday would be celebrated.

Mrs. S. Sethi
Primary Dept.
St. Thomas School,
New Delhi

USE MORE DO'S THAN DON'TS

Using "Do's" rather than "Don'ts" when we talk to children is very difficult, especially if we have already got the "don't" habit. It needs much practice and thought if we wish to break the habit. We must tell the child what to do rather than what not to do. The improvement in relationships between adult and child makes the effort worthwhile. Here are some samples to start on.

The Don'ts

- Don't scatter your clothes here and there
- Don't run around inside the rooms.
- Don't slam the door.
- Don't draw on the walls.

The Do's

- Fold your clothes properly and keep them in their places.
- Go and play outside
- Close the door softly, please.
- You can use your crayons to colour the picture on this page.

Talk to children as you talk to your friends. If adults would talk to children with as much consideration as they showed their friends, they could really communicate with the children and establish excellent relationships.

पर्यावरण अध्ययन — बिरला मन्दिर

—वीणा भूषण

सेंट थॉमस स्कूल, नई देहली

शिक्षा का मूल उद्देश्य विद्यार्थी के अन्दर छुपे ज्ञान को प्रकाशित करना है। मात्र पुस्तकों के अध्ययन, लिखित परीक्षाओं के मापदण्ड तथा निर्धारित पाठ्यक्रम से इस उद्देश्य की पूर्ति संभव नहीं है। इस विस्तृत सृष्टि में अनेक प्राकृतिक ऐवम् मानव निर्मित स्थल हैं, जिनका अध्ययन-अवलोकन, साहचर्य, स्वतन्त्र विचार विमर्श तथा उत्तरदायित्व पूर्ण पद्धतियों के माध्यम से किया जा सकता है। इसी उद्देश्य की पूर्ति के लिए हिन्दी विभाग की योग्यतम शिक्षिका श्रीमती नांगिया के सहयोग से “बिरला-मन्दिर” प्रायोजना का विचार प्रधानाचार्या श्रीमती माइकल के समक्ष प्रस्तुत किया गया। स्वीकृति पश्चात् कक्षा-निर्देश का कार्य आरम्भ हुआ। कक्षा आठवीं ‘स’ की छात्राओं ने सहर्ष इस योजना में भाग लिया। हिन्दी-अध्यापिका ने सभी छात्राओं को कक्षा में विस्तृत प्रश्न-सूची तथा आवश्यक निर्देश प्रदान किए।

कक्षा की चालीस छात्राओं को चार भागों में बाँट दिया गया। प्रत्येक भाग में से एक अध्यक्षा (लीडर) का चुनाव किया गया। अध्यक्षा का कार्य अपने विभाग की कार्यवाही तथा अनुशासन का ध्यान रखना था। प्रथम दिन कक्षा में छात्राओं ने प्रधानाचार्या जी को अनुमति पत्र लिखा, सबसे सुन्दर व शुद्ध पत्र द्वारा कक्षा-अध्यक्षा ने प्रधानाचार्या जी से लिखित अनुमति प्राप्त की। दूसरे दिन प्रबन्धक महोदय—“बिरला मन्दिर” को सम्बोधित करके मन्दिर भ्रमण की अनुमति लेते हुए पत्र लिखवाया गया व सर्वश्रेष्ठ पत्र उसी दिन प्रबन्धक महोदय के पास भिजवा दिया गया।

दिनांक 25-9-81 प्रातः आठ बजे सभी छात्राओं ने अपने अपने विभाग के साथ प्रस्थान किया। मन्दिर के प्रवेश-द्वार तक पहुँचते ही ‘कला’ में रुचि रखने वाली छात्राओं ने द्वार के बाहर ही पेन्सिल से डायरी में रेखाचित्र बनाने आरम्भ किए, अन्य छात्राओं ने मन्दिर के निर्देशानुसार पादुका-

स्थल पर पादुकाएं उतार कर प्रसन्नचित्त से मन्दिर में प्रवेश किया। शीघ्र ही अपने अपने विभाग के साथ छात्राओं ने मन्दिर के कार्यकर्त्ताओं व पुजारी से विभिन्न प्रश्न पूछने आरम्भ किए व उनके उत्तरों को डायरी में लिखना शुरू किया। इस कार्य में लगभग 40 मिनट लग गए। इसके पश्चात् धर्म, संस्कृति, योग, महाभारत तथा ईश्वर से सम्बन्धित दीवारों पर खुदे श्लोकों व अर्थों को लिखना आरम्भ किया। एक विभाग ने पुजारी व अन्य कार्यकर्त्ताओं द्वारा गाये भजन व श्लोकों को टेप किया। दूसरे विभाग ने मन्दिर में लगे पेड़-पौधों का अध्ययन करते हुए कुछ प्रसिद्ध फूल व पत्तों का चयन किया।

छात्राएं अपने कार्य में रत प्रतीत हो रही थीं, उनके ललाट परिश्रम की बूंदों से झिलमिला रहे थे, परिवर्तन हेतु निश्चय किया गया कि किसी छायादार स्थल पर विश्राम व जलपान किया जाए। जलपान पश्चात् मधुर गान का कार्यक्रम कुछ छात्राओं ने प्रस्तुत किया, फोटोग्राफी की इच्छुक छात्राओं ने विश्राम-स्थल तथा अन्य स्थलों के फोटो खींचे। घड़ी की सूइयां टिकटिक करती हुई भागती जा रही थी, 11.30 बज गए, प्रबन्धक महोदय के आने का समय हो चुका था, शीघ्र ही छात्राओं ने अपनी अध्यक्षा सहित कार्यालय में प्रवेश किया—अपने प्रश्नों का उत्तर जानते हुए, उत्पन्न संदेहों का निवारण भी इस स्थल पर हो गया।

अब सभी विभागों की अध्यक्षाओं ने अपने अपने विभाग के कार्य की सूची अध्यापिका को प्रदान की। सम्मिलित विचार-विमर्श के पश्चात् सभी ने वहां से पैदल प्रस्थान किया। प्रस्थान के साथ-साथ सभी ने ‘मन्दिर’ से ‘सेन्ट थॉमस स्कूल’ की दूरी अपने कदमों को गिन कर तय की। एक बज कर 15 मिनट पर हम स्कूल के प्रांगण में प्रविष्ट हुए।

अगले दिन से हमारा कक्षा-कार्य आरम्भ हुआ। सभी ने प्रबन्धक महोदय के नाम धन्यवाद पत्र लिखा। एकत्रित विचार सामग्री के आधार पर सभी छात्राओं ने हिन्दी-पुस्तिका (फ़ाइल) में कार्य को शुद्ध साफ सुन्दर शब्दों में लिखना आरम्भ किया। अन्य कार्य को दो भागों में बांटा गया :—

- (1) ऐच्छिक, व
- (2) अनिवार्य।

अनिवार्य कार्य का अर्थ प्रत्येक छात्रा के लिए :—

- (1) रिपोर्ट—“प्रायोजना सम्बन्धित प्रतिवेदन”
- (2) निबन्ध—“बिरला मन्दिर की सैर”
- (3) कविता—स्वलिखित (विषय : मन्दिर)
- (4) सामान्य ज्ञान
- (5) लघु प्रश्नोत्तर
- (6) दीर्घ प्रश्नोत्तर
- (7) दिल्ली के नक्शे में बिरला मन्दिर की स्थिति चित्रांकन आदि करना था।

ऐच्छिक में :—

- (1) संस्कृत के श्लोकों को अर्थ सहित लिखना, संस्कृत में निबन्ध, पत्र व अन्य सामान्य जानकारी को लिखित रूप देना। संस्कृत अध्यापिका मिस कुन्नेषेठ ने इसमें पूर्ण सहयोग प्रदान किया।
- (2) अंग्रेजी में कविता व निबन्ध लिखना।
- (3) कला का कार्य जैसे रेखाचित्र, ड्राइंग।
- (4) एकत्रित पत्तों का हिन्दी नाम ज्ञात करके उनको कागज पर चिपकाना।
- (5) विभिन्न मॉडल, चार्ट्स तैयार करना।

इस कार्य को पूर्ण करने में छः सप्ताह लगे। अनिवार्य कार्य के आधार पर प्रश्न-पत्र तैयार किया गया जिसमें छात्राओं के अर्जन ज्ञान का मूल्यांकन किया गया।

सम्पूर्ण कार्य के संशोधन व सुधार के पश्चात् विद्यालय में एक छोटी सी प्रदर्शनी का आयोजन

किया गया—अन्य कक्षाओं की छात्राओं ने इन छात्राओं के कार्य की भूरि-भूरि प्रशंसा करते हुए नवीन उत्साह व प्रेरणा जैसे गुणों का प्रदर्शन किया।

छात्राओं के कार्य के कुछ नमूने निम्नलिखित हैं :—

(1) सामान्य ज्ञान

प्रश्न (i) सेंट थॉमस स्कूल से मन्दिर कितनी दूरी पर स्थित है ?

उत्तर :— हमारे विद्यालय से बिरला मन्दिर 1412 कदम दूर है।

प्रश्न (ii) यह मन्दिर कौन से मन् में बना ?

उत्तर :— यह मन्दिर सन् 1939 में बना।

प्रश्न (iii) मन्दिर पर किया गया वार्षिक खर्च ?

उत्तर :— इस मन्दिर के संचालन के लिए प्रतिवर्ष 6 लाख रुपये की लागत आती है।

प्रश्न (iv) मन्दिर को बनवाने में कितने वर्ष लगे ?

उत्तर :— लगभग 9 वर्ष।

(2) शिला-लेखों का वर्णन

पाप का फल दुःख होता है।

पुण्य का फल सुख होता है।

इन पंक्तियों का अर्थ है कि जो मनुष्य धरती पर जन्म लेकर पाप करता है उसे सुख नहीं मिलता है परन्तु उसे दुःखों का सामना करना पड़ता है अतः धरती पर जन्म लेकर पुण्य करना चाहिए पाप नहीं।

— कविता दुआ

(3) प्रतिवेदन (रिपोर्ट)

हम सब छात्राओं और हिन्दी अध्यापिका श्रीमती वीणा भूषण ने कक्षा में आपस में विचार विमर्श किया कि किसी महत्वपूर्ण स्थल पर पर्यावरण अध्ययन किया जाए। हम सब इसी निर्णय पर पहुँचे कि “बिरला मन्दिर” उचित स्थल है। हमने

पत्र लिखकर अपनी प्रधानाचार्या श्रीमती माइकल से अनुमति प्राप्त की।

25-9-81 को प्रातः 8 (आठ) बजे हम सभी आठवीं 'स' की छात्राएं स्कूल बस द्वारा मन्दिर पहुँचे। वहाँ जाकर हम सभी मिले निर्देशों के अनुसार अपनी डायरी लेकर कार्य में जुट गए। लगभग तीन घंटे कार्य करने के बाद हमने विश्राम किया। भोजनोपरान्त हम सब पुनः कार्य में जुट गए। एक बजे के लगभग हम सब वहाँ से कदमों द्वारा दूरी नापते हुए रवाना हुए और 15 मिनट में विद्यालय पहुँच गए।

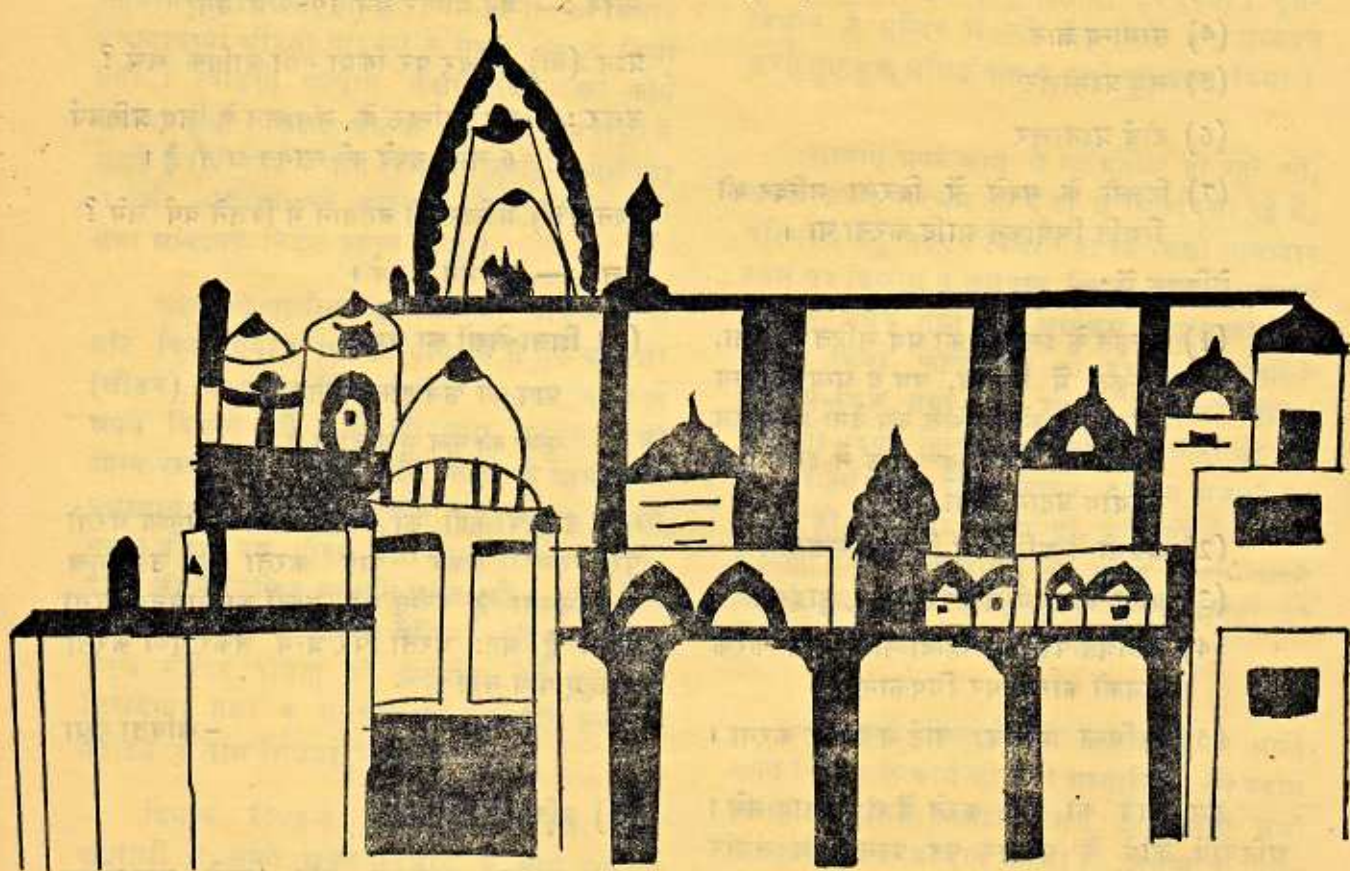
विचार :-हमें यह कार्य बहुत पसंद आया है। इस कार्य से हमारे ज्ञान का वृद्धि व हमारा मनोरंजन

दोनों सिद्ध हुए हैं। ऐसा कार्य करने में अपना अनोखा आनन्द है। इसमें हमें किताबों से हटकर अपनी बुद्धि तथा विवेक का प्रयोग करना पड़ा। हम यह भी कहना चाहते हैं कि ऐसी प्रायोजना के लिए एक दिन का भ्रमण-समय बहुत कम है, हमें ऐसे कार्यों के लिए दो या तीन दिन के लिए भ्रमण का समय मिलना चाहिए। हमारा यह अध्ययन सफल रहा।

— 'शैली जैन'
आठवीं 'स'

(4) चर्च, मस्जिद और मन्दिर में अन्तर

चर्च, मस्जिद और मन्दिर तीनों ही धार्मिक स्थान हैं। मन्दिर का वातावरण भक्त-गणों के आवागमन के कारण चहल युक्त तथा जीवन्त रहता है जबकि मस्जिद नमाज के समय के अलावा



विरला मंदिर का बाह्य दृश्य

शान्त रहती है तथा चर्च में भी प्रायः रविवार को प्रार्थना के अलावा शान्ति छाई रहती है।

मस्जिद और चर्च सदैव एक परकोटे से घिरी इमारतें होती हैं जबकि मंदिर के लिए ऐसा होना आवश्यक नहीं है।

हर मन्दिर में एक प्रदक्षिणा पथ अवश्य रहता है। एक या एकाधिक मूर्तियाँ अवश्य होती हैं जिसके सामने दीपक, पत्र, पुष्प होने आवश्यक हैं। मस्जिद सिर्फ एक खुला हुआ आंगन सा होता है; जिसमें पश्चिम की ओर एक दीवार होती है—जिसकी ओर अभिमुख होकर नमाज पढ़ी जाती है। चर्च में एक या एकाधिक क्रोस अवश्य रहता है। बाहर बाग बगीचा तथा भीतर एक प्रार्थना कक्ष होता है। पवित्र पुस्तक बाइबिल की प्रति अवश्य रहती है।

इन विभिन्नताओं के उपरान्त भी धार्मिक स्थान होने के नाते तीनों हमारे मन वचन और कर्म को पवित्र करते हैं।

—समीक्षा
आठवीं 'स'

(5) स्वलिखित कविताएं

बिरला मंदिर

भारत है सांस्कृतिक देश,
इसमें बसते मन्दिर अनेक,
बिरला मन्दिर है, उनमें एक।
भारत की संस्कृति का रक्षक,
दुर्विचारों का है यह भक्षक।
सत्य अहिंसा का प्रतीक,
बिरला मन्दिर सभ्यता का दीप ॥

कारोगरों ने पसीना बहाया,
बड़े प्रेम से इसे बनाया।
बूढ़े, बच्चे और जवान,
सभी पाते हैं, इससे ज्ञान।

यह है, भारत की शान,
बिरला मन्दिर है—महान ॥

—श्रद्धा मलिक
आठवीं 'स'

बिरला मंदिर और मैं

देखो यह है, बिरला मन्दिर,
कितना विशाल, कितना सुन्दर।
नीचे तो मखमली चादर है,
ऊपर तो तन वितान अम्बर है ॥

प्रभु भुझे दे ऐसा वरदान,
सदा करूं मैं धर्म को प्रणाम।
जब तब हो सवेरे यहां आकर,
लगाऊं प्रभु मैं अपना ध्यान ॥

—प्रिया खन्ना
आठवीं 'स'

(6) संस्कृत श्लोक

आत्मैव ह्यात्मनो बन्धुरात्मैव रिपुरात्मनः।
आत्मात्मना न चैत्रातस्तदुपायोरस्तिनेतरः ॥

अर्थ :— आत्मा ही आत्मा का बन्धु है, आत्मा ही आत्मा का शत्रु है यदि स्वयं अपना उद्धार नहीं करता तो कोई उपाय नहीं है।

यो भूतम् च भव्यम् च सर्वम्
यशचाधितिष्ठति।
स्वस्य च केवलम् तस्मै ज्येष्ठाय
ब्रह्मणे नमः ॥

अर्थ :— भूत, वर्तमान तथा भविष्य काल के अधिष्ठता, अखिल विश्व के नियामक सर्वश्रेष्ठ शुद्ध, पूर्ण ब्रह्म उस परमात्मा को नमस्कार।

—श्रद्धा मलिक तथा विनीता हाँडा
आठवीं 'स'

(7) योग दर्शन

अपने मन की वृत्तियों का निरोध ही योग है। मन निरन्तर अभ्यास व वैराग्य से वश में किया जा सकता है। भगवान की अथाह भक्ति से भी मन वश में हो जाता है। योग के लिए पहले आसनों की सिद्धि आवश्यक है।

तस्मिन् सति श्वासप्रश्वासयोगंति विच्छेद
प्राणायामः। (योगसूत्र 2149)

आसन सिद्धि हो जाने पर श्वास-प्रश्वास की गति को नियमित करने का अभ्यास करना चाहिए। इस अभ्यास को ही प्राणायाम कहते हैं। प्राणायाम से अन्धकार का पर्दा हट जाता है और मन धारणा के योग्य बन जाता है।

“ततः परमा वश्यतेन्द्रियाणाम्” (योगसूत्र 2155)
तब इन्द्रिया परम् वश में हो जाते हैं।

माला सोबती, प्रिया खन्ना

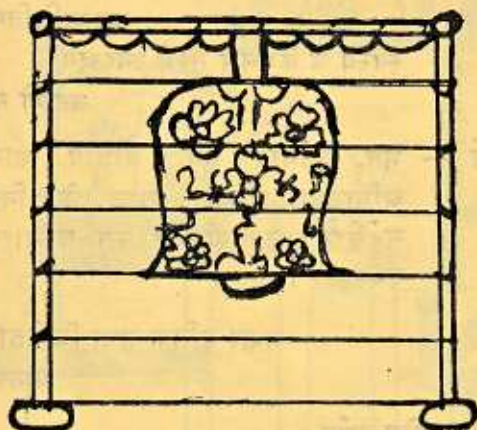
गीता वाक्य

कर्मणैव हि ससिद्धिमास्थिता जनकायः।
लोकसंग्रह मेवापि सम्पश्यन्तु महसि।
(गीता अ० 3120)

जनक इत्यादि ज्ञानीजन भी आशक्ति रहित कर्म द्वारा ही परम सिद्धि को प्राप्त हुए हैं। इसलिए हे अर्जुन लोक संग्रह को देखते हुए भी तुम्हें कर्म करना चाहिए।

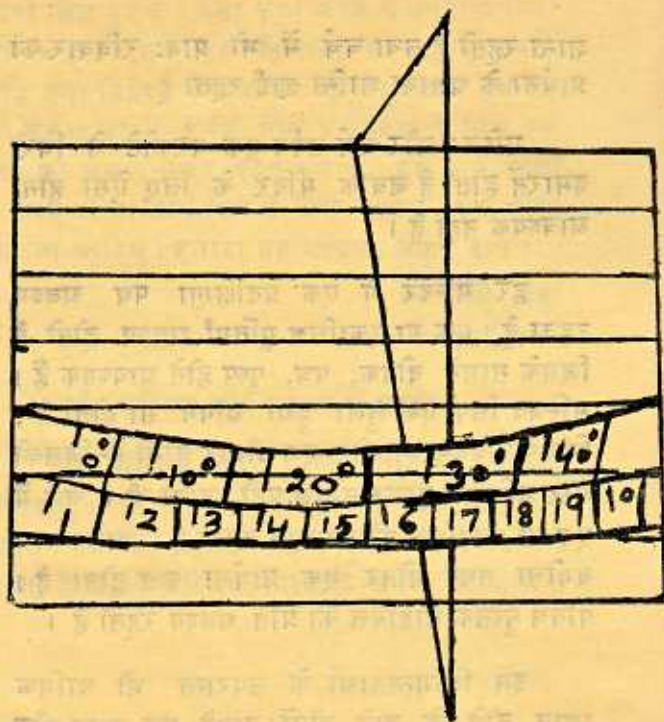
(सभा छात्राएँ)

(8) मन्दिर में स्थित घंटी तथा धूपघड़ी



इस घंटी की विशेषता यह है कि इसको चोन के निवासियों ने बिरला को उपहार के रूप में दिया था। इस पर बहुत अच्छे ढंग से नक्काशी की गई है।

माला बेदी



इस घड़ी की यह विशेषता है कि जब इस पर सूरज की किरणें पड़ती हैं तो वह दिन का सही समय बता देती है।

माला बेदी

THE MYSTERIOUS CITIES

The city that shocks you	- ELECTRICITY
The city that travels speedily	- VELOCITY
The city that is wise	- SAGACITY
The city that is truthful	- VERACITY
The city that is very talkative	- LOQUACITY
The city that is cruel	- ATROCITY
The city that should be removed	- SCARCITY
The city that is lively	- VIVACITY
The city that is greedy	- VORACITY
The city that makes men great	- CAPACITY
The city that is impudent	- AUDACITY

TEACHER TIPS FOR ART-WORK

- * Butterflies or stained glass windows are two of many things that can be made with crayon bits pressed with a warm iron between two pieces of wax paper. CAUTION - keep crayon bits small - grated bits work. Foil pieces or scraps may be molded into animals or objects.
- * A light bulb or a balloon can be used as the foundation for a puppet head and later removed by breaking. If the globe is greased or covered with aluminium foil, the paper mache will not stick to the glass, and the broken glass can be more easily removed.
- * To make better spatter work pictures, wet the back of leaf or design and lay it on paper that is to be spattered. It sticks perfectly while the work is being done. Use old tooth brushes for spatter painting.
- * Birthday Tablecloth - Use newsprint. Scotch tape firmly on table. Invite children to sit wherever they choose. Then they colour creatively their own place setting.
- * Dabs of clay under the paint containers will keep them from tipping over.
- * Corrugated paper can be wrapped around tin cans for flower containers.
- * Liquid starch can be used for finger paint. It is not necessary to wet paper.
- * A large flat pan with water simplifies wetting paper for use with coloured chalk.
- * A long wire strung across one side of the room with paper clips attached makes easy work of displaying, changing, or hanging pictures.
- * Newspapers can be used : (a) to keep tables clean when using coloured chalk on wet paper or under finger painting ; (b) to absorb milk or water that is spilled ; (c) under paste work.
- * For necklaces that children can string together, paint pieces of drinking straws or macaroni.
- * Use old shirts for smocks.
- * Spool-dolls can be made from spools strung on elastic with beads tied on ends to hold elastic.